EFFICIENCY AND "THE FIX": INFORMAL INTERGROUP RELATIONS IN A PIECEWORK MACHINE SHOP[1]

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ABSTRACT

Conflict relations between the informal work group and plant management may involve the participation of other groups of the factory's social structure. It was found, through participant observation, that the machine operatives of one shop received surreptitious assistance from five "service groups" in a subversion of formally instituted rules and procedures. This informally organized intergroup "ring" was able to frustrate a series of managerial attempts to effect new designs of production control.

As part of a broader examination and appraisal of the application of piecework incentive to the production line of an American factory this paper essays the simple but largely neglected task of exploring the network of intergroup relations in which the work activity of machine operatives is imbedded. Exploration will be restricted to a limited sector of the total web of interaction in one shop; description will center upon those relationships that provide support to the operator group in its resistance to and subversion of formally instituted managerial controls on production. It is hoped that observations reported here not only will bear upon the practical problem of industrial efficiency but will also contribute to the more general study of institutional dynamics.

This could be considered the third in a series of attempts to make more careful discriminations in an area of research that has been characteristically productive of sweeping generalizations, blanket conceptualizations, or algebraic gymnastics that tend to halt inquiry at the same time that they lay a fog over otherwise easily discerned reality. Data for all three papers were acquired in an investigation of a single work situation by a single technique of social inquiry, participant observation. The writer was employed for nearly a year as radial-drill operator in one of the machine shops of a steel-processing plant, and he kept a daily record of his observations and experiences relating to work activity and social interaction in the shop. His major interest lay in the phenomenon of restriction of output, or "systematic soldiering," the practice of which various sociological soundings have revealed in the lower depths of our industrial organization. To complete the analogy: the writer donned a diving suit and went down to see what it looked like on the bottom.

One conclusion has already been set forth,[2] namely, that the usual view of output restriction is grossly undifferentiating. Different kinds of "institutionalized underworking" were practiced, each with its characteristic pattern of antecedents and consequences. The blanket term "restriction" was found to cloak all-important contrarieties of work behavior. Machine operatives not only held back effort; sometimes they worked hard. The very common failure to note such contrarieties has tended, of course, to impede the progress of research by checking consideration of the specific conditions under which differences in behavior occur.

A second finding was the discovery of complexity where simple lines of relationship had generally been assumed to exist.[3] When inconsistencies in the operator's be-

[1] This report is drawn from materials presented in the writer's doctoral dissertation, "Restriction of Output in a Piecework Machine Shop" (University of Chicago, 1952), under the direction of Everett C. Hughes.

[2] Donald Roy, "Quota Restriction and Goldbricking in a Machine Shop," *American Journal of Sociology*, LVII (March, 1952), 427–42.

[3] Donald F. Roy, "Work Satisfaction and Social Reward in Quota Achievement: An Analysis of Piecework Incentive," *American Sociological Review*, XVIII (October, 1953), 507–14.

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havior seemed to contradict the hypothesis that variations in application of economic incentive could account for the variations in work effort, a more intensive examination of response to piecework was undertaken. This disclosed that piecework incentive was not equivalent to economic incentive and that attainment of piecework "quotas" afforded machine operators a complex of rewards in which the strictly economic might or might not play a part.

The third set of observations, to be here discussed, again exhibits complication in a picture that has come to be accepted as simple in design. Here the focus of interest is the structure of "informal" intergroup connections that bear directly upon work behavior at the machine level. The material will not deny the hypothesis that the willingness of operatives to put forth effort is a function of their relationship with management or the widely held affirmation that this relationship is mediated by the organization of operatives into "informal groups." It will indicate, however, that further advances in the understanding of work behavior in the factory may involve attention to minor as well as major axes of intergroup relations. It will show that the relevant constituents of problematic production situations may include "lateral" lines of interaction between subgroups of the work force as well as "vertical" connections between managerial and worker groups.

It will be seen, in other words, that the interaction of two groups in an industrial organization takes place within and is conditioned by a larger intergroup network of reciprocal influences. Whyte has called attention to the limitations of studying groups in "isolation," without regard for the "perspectives of large institutional structures."[4] A second warning might be: The larger institutional structures form networks of interacting groups.

As a bona fide member of an informal group of machine operatives the writer had an opportunity to observe and experience management–work group conflict in its day-to-day and blow-by-blow particulars. Also, he participated in another kind of social process, intergroup co-operation. Not only did workers on the "drill line" co-operate with each other as fellow-members of a combat team at war with management; they also received considerable aid and abetment from other groups of the shop. This intergroup co-operation was particularly evident when operators were trying to "make out," or attain "quota" production, on piecework jobs.

It has been noted in another connection that machine operators characteristically evinced no reluctance to put forth effort when they felt that their group-defined piecework quotas were attainable.[5] It might seem, at first glance, that the supporting of operators during intensive application to "getting the work out" would represent co-operation *with* and not *against* management. However, the truth is that operators and their "allies" joined forces in certain situations in a manner not only unmistakably at variance with the carefully prepared designs of staff experts but even in flagrant violation of strongly held managerial "moral principles" of shop behavior. In short, machine operators resorted to "cheating" to attain their quotas; and since this often involved the collusion of other shop groups, not as mere "accessories after the fact" but as deeply entangled accomplices, any managerial suspicion that swindling and conniving, as well as loafing, were going on all the time was well founded. If the workers' conviction that the echelons of management were packed with men addicted to the "dirty deal" be additionally considered, it might appear that the shop was fairly overrun with crooks. Since a discussion of "contrast conceptions"[6] cannot find a place within the

[4] William F. Whyte, "Small Groups and Large Organizations," in *Social Psychology at the Crossroads*, ed. John R. Rohrer and Muzafer Sherif (New York: Harper & Bros., 1951), pp. 297–312.

[5] Roy, "Work Satisfaction and Social Reward in Quota Achievement," *op. cit.*

[6] See L. Copeland, "The Negro as a Contrast Conception," in *Race Relations and the Race Problem*, ed. E. T. Thompson (Durham: Duke Uni-

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limited scope of this paper, it must suffice at this point merely to declare that the kind of effort made by operators and their aids to expedite production, when they did try to expedite it, was actually in many respects conflict with management.

One belief, universally accepted in the work group, may be phrased thus: "You can't 'make out' if you do things the way management wants them done." This gem of shop wisdom thus negatively put is hardly a prescription for action, but its obverse, "You've got to figure the angles," gave all hands plenty to do.

According to Al McCann (all names used are fictitious), the "Fagan" of the drill line, "They time jobs to give you just base rates. It's up to you to figure out how to fool them so you can make out. You can't make any money if you run the job the way it's timed."

We machine operators did "figure the angles"; we developed an impressive repertoire of angles to play and devoted ourselves to crossing the expectations of formal organization with perseverance, artistry, and organizing ability of our own. For instance, job timing was a "battle all the way" between operators and time-study men. The objective of the operators was good piecework prices, and that end justified any old means that would work. One cardinal principle of operator job-timing was that cutting tools be run at lower speeds and "feeds" than the maximums possible on subsequent production, and there were various ways of encouraging the institution of adequate differentials. Also, operators deemed it essential to embellish the timing performance with movements only apparently functional in relation to the production of goods: little reachings, liftings, adjustings, dustings, and other special attentions to conscientious machine operation and good housekeeping that could be dropped instanter with the departure of the time-study man.

However, the sophistication of the time-study men usually matched the strategy employed against them. The canniest operators often gave of their best in timing duels only to get "hopeless prices" for their pains:

> Gus Schmidt was timed early in the evening on a job, and given a price of $1.00 per 100 for reaming one hole, chamfering both sides of three holes, and filing burrs on one end of one hole. All that for one cent!
>
> "To hell with them," said Gus.

This is not to say that the "hopeless price" was always truly hopeless. Since the maintenance of an effective control over job-timing and hence price-setting was an uncertain, often disheartening matter, operators were forced to develop skills for turning bad into good. Under the shaping hands of the "angle-applicators" surprising metamorphoses sometimes took place. Like the proverbial ugly duckling that finally feathered out into a beautiful swan, piecework jobs originally classified in operator vernacular as "stinkers" came to give off the delightful aroma of "gravy." Without going into the particulars of the various types of operation, one might say that jobs were "streamlined." This streamlining was, of course, at times "rough on the tools" and adverse in its effects on the quality of output. The jettisoning of quality called, necessarily, for a corresponding attention to ways and means of shielding supervisors and inspectors from discovering the sacrifices and consequently brought into further play the social graces of equivocation, subterfuge, and prestidigitation.

Still, the adroitness of the machine operators, inventing, scheming, and conniving unto themselves to make quotas attainable, was not enough. Many "stinkers" would not yield before the whitest heat of intelligence or the most cavalier disregard for company property. An appreciable incidence of failure should not be surprising when it is kept in mind that the black arts of "making out" were not only responses to challenge from management but also stimulations, in circular interaction, to the development of

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versity Press, 1939), and S. Kirson Weinberg, "Aspects of the Prison's Social Structure," *American Journal of Sociology*, XLVII (March, 1942), 717–26.

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more effective countermagic in the timing process. It would be hard to overestimate the wizardry of the time-study men with pencil and paper in computing "angle-tight" piecework prices. During the latter months of his employment, months that marked the peak of his machine performance, the writer was able to achieve quota earnings approximately half the time that piecework jobs were offered. If this experience is roughly representative of the fortunes of the drill-line group, the battle with the stopwatch men was nip and tuck.

It is to be expected that a group of resourceful operatives, working with persistent intent to "make out" at quota levels, and relying heavily upon illegal practices, would be alert to possibilities of assistance from groups that were able and willing to give it and would not hesitate at further flouting the rules and regulations in cultivating it. It is also to be expected that the upholders of a managerial rational and moral order would attempt to prevent corruptive connections and would take action to stamp out whatever subversive organization did develop. During the eleven-month study, machine operators, including the drill-line men, were enjoying the co-operation of several other shop groups in an illegal facilitation of the "make-out" process. This intergroup network effectively modified certain formally established shop routines, a too close attachment to which would handicap the operators. The "syndicate" also proved adequate in circumventing each of a series of "new rules" and "new systems" introduced by management to expurgate all modifications and improvisations and force a strict adherence to the rules.

The shop groups that conspired with the operators were, namely, the inspectors, the tool-crib men, the time-checkers, the stockmen, and the setup men. With a single exception, these "service" groups stemmed from lines of authority distinct from the one for which the operators formed the base. The one exception was the setup group; it was subordinate to the same set of officials in the "production" line of authority that controlled the operators. A brief description of the duties of each of these service groups and a rough tracing of the sequences of interaction involved in the prescribed work routine of the drill men will indicate the formal pattern of intergroup relations within which informally instituted variations were woven.

THE SETUP MEN

A chief function of the setup men was to assist machine operators in the "setting-up" of jigs and fixtures preparatory to operation of machines in the processing of materials. It included the giving of preliminary aid and advice at the beginning of the production process, at which time the setup men would customarily "run the first piece" to show operators how to do it and to indicate that the setup was adequate to meet work specifications. The duties of the setup men also included "trouble-shooting" on occasions when operators encountered difficulties that effected a lowering of the quality of output below inspection standards or a reduction of the rate of output unsatisfactory to operators or supervisors.

THE INSPECTORS

The chief function of the inspectors was to pass judgment on the quality of the output of the machine operators, either accepting or rejecting work turned out, according to blueprint specifications. Their appraisals came at the beginning of operations, when especially thorough examinations of the first pieces processed were made, and subsequently at varying intervals during the course of a job.

THE TOOL-CRIB MEN

The tool-crib attendants served the operators as dispensers of jigs, fixtures, cutting tools, blueprints, gauges, and miscellaneous items of equipment needed to supplement basic machinery and operator-owned hand tools in the processing of materials. They worked inside a special inclosure conveniently located along one of the main arterials of shop traffic and did most of their dispensing across the wide sill of a "window," an aper-

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ture which served, incidentally, as locus of various and sundry transactions and communications not immediately relevant to tool-dispensing. There were two other openings into the crib, a door, two steps from the window, and a wide gate, farther down the corridor.

THE STOCKMEN

The stockmen were responsible for conducting a steady flow of materials to the machines for processing. Their work called for the removal of finished work as well as the moving-up of fresh stock and involved a division of labor into two specializations "stock-chasing" and "trucking." The chief duties of the stock-chasers were to "locate" unprocessed materials in the various storage areas, when operators called for stock, and to direct the activities of the truckers, who attended to the physical transportation.

THE TIME-CHECKERS

The time-checkers worked in another special inclosure, a small "time cage," from which they distributed to the operators the work orders "lined up" by the schedulemen of the Planning Department and within which they registered the starting and completion times of each job. There were four time-registering operations for every work order. First, upon presenting an operator with a work-order slip, the checker would "punch" him "on setup" by stamping a separate order card with a clocking mechanism that registered the hours in tenths. Later, when the operator would call at the cage window to announce completion of all preparatory arrangements for the actual processing of materials, the checker would punch him "off setup" and "on production." Finally, following another operator announcement, the checker would clock the termination of the machining process with a fourth punch. At the time of his terminal punch the operator would report the number of "pieces" completed on the job just concluded and would receive a new work order to start the cycle over again. And, since the terminal punch on the completed job would be registered at the same time as the initial punch on the new one, hours on shift would be completely accounted for.

OPERATOR INTERACTION WITH SERVICE GROUPS

The machine operator's performance of each individual job or order assigned to him involved formal relationships with service groups in well-defined sequences or routines.

First, the operator would receive his work order from the time-checker. Next, he would present the work order to a tool-crib attendant at the crib window as a requisite to receiving blueprints, jigs, cutting tools, and gauges. At the same time, that is, immediately before or after approaching the crib attendant, sometimes while waiting for crib service, the operator would show his work order to a stock-chaser as a requisite to receiving materials to work on. The stock-chaser, after perusing the order slip, occasionally with additional reference to the blueprint, would hail a trucker to bring the necessary stock to the operator's machine. If there were no delay in contacting a stock-chaser or in locating and moving up the stock, a load of materials would await the operator upon his arrival at his machine with equipment from the tool crib.

Upon returning to his machine, the operator would proceed with the work of "setting up" the job, usually with the assistance of a setup man, who would stay with him until a piece was turned out whose quality of workmanship would satisfy an inspector. In appraising a finished piece, the inspector would consult the blueprint brought from the crib for work specifications and then perform operations of measurement with rules, gauges, micrometers, or more elaborate equipment. The inspector might or might not "accept" the first piece presented for his judgment. At any rate, his approval was requisite to the next step in the operator's formal interactional routine, namely, contacting the time-checker to punch "off setup" and "on production."

The operator would ordinarily have fur-

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ther "business" contact with a setup man during the course of production. Even if the job did not "go sour" and require the services of a "trouble-shooter," the setup man would drop around of his own accord to see how the work was progressing. Likewise, the operator would have further formal contact during the course of his job with inspectors and tool-crib attendants. Each inspector would make periodic "quality checks" at the machines on his "line"; and the operator might have to make trips to the tool crib to get tools ground or to pick up additional tools or gauges. He might also have to contact a stock-chaser or truckers for additional materials.

Upon completion of the last piece of his order the operator would tear down his setup, return his tools to the tool crib, and make a final report to the time-checker. Should the job be uncompleted at the close of a shift, the operator would merely report the number of pieces finished to a checker, and the latter would register a final punch-out. The setup would be left intact for the use of the operator coming in to work the next shift.

MAJOR JOB CATEGORIES

Certain variations in types of jobs assigned to operators are pertinent to a discussion of intergroup collusion to modify formal work routines. These variations could be classified into four categories: (1) piecework; (2) time study; (3) rework; and (4) setup.

Each piecework job carried a price per 100 pieces, determined by the timing operations mentioned earlier. Time-study and rework jobs carried no prices. The time-study category included (*a*) new jobs that had not yet been timed and (*b*) jobs that had once carried a piecework price. As the label indicates, rework jobs involved the refinishing of pieces rejected either by inspectors or in the assembly process but considered salvageable by reprocessing.

Since time-study and rework jobs carried no piecework prices, operators engaged in these two types of work were paid "day rate," that is, according to an hourly base rate determined in collective bargaining. The base rates represented minimal wage guaranties that not only applied to "day work" but also covered piecework as well. If an operator on piecework failed to exceed his base rate in average hourly earnings on a particular job on a particular day, he would be paid his base rate. Failure to produce at base rate or above on the first day of a piecework job did not penalize an operator in his efforts to earn premium pay on the second day; nor did failure to attain base rate on one piecework job on a given day reduce premiums earned on a second job performed that day.

Not a fourth type of job, but measured separately in time and payment units, were the setup operations. Piecework jobs always carried piecework setups; failure to equal or exceed base rate on setup did not jeopardize chances to earn premium on "production," and vice versa. Time-study jobs frequently carried piecework setups; rework never.

Obviously, these formal work routines may easily be modified to fit the perceived needs of machine operators. Possibilities for the development of "make-out angles" should be immediately apparent in a work situation characterized by job repertoires that included piecework and day-work operations; minimum-wage guaranties uniform for all work done; and separate payment computations by jobs and days worked. If, for instance, time formally clocked as day work could be used to gain a "head start" on subsequent piecework operations, such a transferral might mean the difference between earning and not earning premiums on doubtful piecework jobs. Similarly, time on "hopeless" piecework jobs might be applied to more promising operations; and the otherwise "free time" gained on "gravy" jobs might be consumed in productive anticipation of the formal receipt of ordinarily unrewarding piecework. Especially lush "gravy" jobs might even contribute extra time enough to convert "stinkers" into temporary "money-makers." Realization of such possibilities in any given case would necessarily involve obtaining, without a

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work order, the following: (1) identification of future operations as listed in sequence on the schedule board inside the time cage; (2) jigs, blueprints, and cutting tools appropriate to the work contemplated; (3) stock to work on; (4) setup help and advice; (5) inspection service; and (6) "trouble-shooting" assistance as needed. Obviously, this sequence of accomplishments would call for the support of one or more service groups at each step. That the required assistance was actually provided with such regularity that it came to be taken for granted, the writer discovered by observation and personal experience.

The following diary recording of interaction between the writer and a time-checker may be indicative of the extent to which service-group collaboration with the operators in perverting the formal system of work routine had become systematized:

When I came to punch off the rework, the time-cage girl said, "You don't want to punch off rework yet, do you?"—suggesting that I should get a start on the next job before punching off rework.

Even line foremen, who, in regard to intergroup collusion preferred the role of silent "accessory after the fact," became upset to the point of actual attempted interference with formal rules and regulations when the naïve neophyte failed to meet the expectations of his own informal system.

Art [foreman] was at the time cage when I punched off the day work of rereaming and on to the piecework of drilling. He came around to my machine shortly after.

"Say," he said, "when you punch off day work onto piecework, you ought to have your piecework already started. Run a few; then punch off the day work, and you'll have a good start. You've got to chisel a little around here to make money."

Acceptance of such subversive practices did not extend, however, to groups in management other than local shop supervision. The writer was solemnly and repeatedly warned that time-study men, the true hatchet men of upper management, were disposed to bring chiselers to speedy justice.

Gus went on to say that a girl hand-mill operator had been fired a year ago when a time-study man caught her running one job while being punched in on another. The time-study man came over to the girl's machine to time a job, to find the job completed and the girl running another.

NEW RULES AND NEW SYSTEMS

During the near-year that he spent in the shop the writer felt the impact of several attempts to stamp out intergroup irregularities and enforce conformity to managerial designs of procedure. He coincidentally participated in an upholding of the maxim: "Plus ça change, plus c'est la même chose."

Attempts to tighten controls came in a series of "new rules" or "new systems" promulgated by bulletin-board edicts. How far the beginning of the series antedated the writer's arrival is not known. Old-timers spoke of a "Golden Age" enjoyed before the installation of the "Booth System" of production control; then operators "kept their own time," turning in their work orders as they saw fit and building "kitties" on good jobs to tide them over rainy days on poor jobs.

The first new rule during this study went into "effect" less than two months after the writer was hired. It was designed to tighten controls in the tool-crib sector, where attendants had not only been passing out setups ahead of time but allowing operators or their setup men to enter the toolroom to make the advance pickups themselves. An aim of the new rule was also to curb the operators' practice of keeping "main setups" at the machines instead of turning them in at the completion of operations.

A new crib ruling went into effect today. A memorandum by Bricker [superintendent] was posted on the side of the crib window. Those who check out tools and jigs must sign a slip in triplicate, keeping the pink one and turning it in with the tools in exchange for the white original, which would constitute proof that the tools had been returned. No new setups would be issued until the old ones had been turned in.

An optimistic perception of the new procedures was expressed by young Jonesy, a

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tool-crib attendant and otherwise willing conniver with the operators: "Tools are scattered all over the shop. This way we'll have them all in order in the crib, and the fellows can get them anytime they need them."

But multiple-drill operator Hanks, old-timer on the line, drew upon his lengthy experience with managerial efficiency measures and saw the situation differently:

Hanks commented unfavorably on the new ruling. He and the day man [his machine partner on the other shift] had been keeping the tools for their main setups at their bench, or, rather, under it. This practice, according to Hanks, was to insure their setting up promptly without inordinate waste of time and to insure their having all the tools needed. Hanks said that on a previous occasion he was told to turn in one of his main setups, which included over a dozen drills, reamers, taps, etc., of varying sizes. He did so, but, when he needed this setup again, the crib man couldn't locate all the tools. He asked Hanks to come back in the crib and help him find them. Hanks refused. After several hours of futile search, Hanks was finally induced to "come back and find his tools." He did so on condition that it would not be on his own time. The foreman agreed to this.

"The same thing is going to happen again," predicted Hanks. "And I'm not going back there to find my tools they scatter all over, on my own time."

Though the operators went through the formality of an exchange of slips when they exchanged setups, the new procedures did not modify the practice of getting setups from the crib ahead of time. Appreciable effects of the new ruling included making more paper work for crib attendants at the same time that more work at assembling setups was thrust upon them. Jonesy's happy prediction did not materialize: the tools were not "always in order." Subsequent events confirmed Hanks's gloomy forebodings:

It took Paul [setup man] and me several hours to get set up for the sockets, as the setup given was incomplete.

Some time was spent in looking for an angle plate that was specially made for the job. Both Paul and Steve [superintendent] were irritated because the crib men could not find the plate.

We spent an hour setting up because we could not find the jig.

Included in the new ruling was a stipulation that blueprints and gauges be turned in by the operators at the end of each shift, though setup paraphernalia other than prints and gauges were to be left at the machines as long as jobs were in operation. Calling for prints and gauges at the beginning of the shift, waiting at the crib window in the line that naturally formed, even when these items were "located" immediately, consumed operator time.

Owing to the new crib ruling, he [Joe Mucha, the writer's machine partner on another shift] turned in the tap gauge. I spent 20 minutes trying to get it back again. The crib man could not find it and claimed that Joe had not turned it in. Joe stayed after three o'clock to help me get it, countering the arguments of the crib with the slip that he retained as evidence. Finally the gauge was located in the crib.

I started out a half-hour late on operation 55 on the pedestals, due to delay at the crib waiting to check out the print and gauge that Joe had just turned in.

Four months later the new crib ruling was modified by another that canceled the stipulation regarding the turning-in of blueprints and gauges and called for changes in the paper work of operator–crib-attendant relations. These changes were featured by a new kind of work order, duplicates of which became involved in tool-crib bookkeeping. The change reduced the waste of operator time at the start of shifts, but to the burden of the crib attendants paper-work irritations were now added.

When I punched in on the rework and asked Walt [crib attendant] for a print, he fumed a bit as he sought a duplicate of my new-type yellow work order in a new file of his.

"I haven't been able to find more than one in five duplicates so far," he said. "And there's supposed to be a duplicate for every one."

Walt said tonight, when I presented him with a work-order card for tools, "That makes

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the twelfth card I've had and no duplicate!"

The tool crib under the new system is supposed to have duplicate work orders in their file of all jobs given operators. These duplicates are to be put in the toolroom files as soon as they are put on the board; and the operators are to sign these duplicates when checking out setups.

The "new system" did operate to handicap operators in that they were not to receive new setups from the crib until they received the new yellow work orders from the time cage to check with the duplicates in the crib. However, setup men roamed at will in the toolroom, grinding tools and fixing jigs, and were able to help the operators by picking up setups ahead of time for them. Their detailed knowledge of the various setups made it possible for them to assemble the necessary tools without the use of setup cards.

"This is a good job," I said to McCann [now setup man]. "I wish I could get it set up ahead of time, but I guess it's no use trying. I can't get the setup now from the toolroom until I get the new work order from the time girls."

McCann thought a moment. "Maybe I can get the jig and tools out of the crib for you."

McCann did get the jig and tools, and I got a half-hour's head start on the job.

The writer had found Ted, a stock-chaser, and his truckers, George and Louie, willing connivers in the time-chiseling process. They moved up stock ahead of time, even after the new system made presentation of the new work order to the stock-chaser a prerequisite to getting stock. Contrary to first impressions, for all practical purposes the situation was unchanged under the new system.

I could not go ahead with the next order, also a load of connecting rods, because the new ruling makes presentation of a work order to the stock-chaser necessary before materials can be moved up. So I was stymied and could do nothing the rest of the day.

About an hour before I was to punch off the connecting rods, I advised Ted that I would soon be needing another job. He immediately brought over a load of reservoir casings.

The new system also included complication of operator-inspector relations. Inspectors were now to "sign off" operators from completed jobs before new work orders could be issued at the time booth. The "signing-off" process included notation by the inspector of the time of operation completion, a double check on the time-checker's "punch out." This added, of course, to the paper work of inspectors.

Drill-man Hanks's first response to this feature of the new system was "individualistic":

Hanks commented on the new system tonight. He thinks that its chief purpose is to keep the operators from getting ahead on an operation and starting the next job on saved time. He said that the inspector checked him off a job tonight at 4:40, and he was not due to punch in on the next one until 6:10. He changed the time recorded by the inspector on his work slip to 6:10 and went ahead as usual. If he had not done so, there would have been a "gap" of an hour and a half unaccounted for in the records.

The writer found himself "stymied" at first but soon discovered that the new obstacle could be overcome without engaging in such a hazardous practice as "forging."

It was ten o'clock when we were ready to punch off setup, and Johnny [setup man] asked Sam [inspector] to sign me off setup earlier, so that I could make out on setup.

"Punch me off at nine o'clock," I said, not expecting Sam to check me off earlier, and purposely exaggerating Johnny's request.

Sam refused. "I can't do that! If I do that for you, I'll have to do it for everybody!"

Sam seemed somewhat agitated in making the refusal.

A few minutes later he said to Johnny, "Why did you ask me to do that when Hanks was standing there?"

Hanks had been standing by my machine, watching us set up.

"I can't take you off an hour back. Go find out when you punched in on this job in the first place."

Johnny consulted the time-cage girl as to the time I punched on the job, later talked to Sam at Sam's bench while I was working, and came to me with the announcement that it

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was "fixed up" so that I made out on setup and was credited with starting production at 9:30. This gave me an hour and a half of "gravy."

By the time the "new system" was a month old, Sam was not only doing this for everybody but actually taking the initiative:

When I punched off setup for the eight pieces, Sam asked me if I wanted him to take me off setup at an earlier time in order that I might make out on the setup. I refused this offer, as it wasn't worth the trouble for me to stop to figure out the time.

Instead of looking at the clock when an operator asks to be taken off setup, Sam usually asks the operator, "When do you want to be taken off?"

No sooner had the shop employees adjusted to this "new system" and settled down to normal informal routine than they were shocked by a new pronunciamento that barred admittance to the toolroom to all save superintendents and toolroom employees:

A new crib ruling struck without warning today. Typewritten bulletins signed by Faulkner [shop manager] were posted on the toolroom door, barring admittance to all save the toolroom employees and the two departmental foremen [superintendents], Bricker and Steve. Other foremen and setup men are not to be admitted without permission from Milton, toolroom supervisor.

Hanks predicts that the new ruling won't last out the week.

Stimulated by Hanks's prediction, the writer kept an eye on the toolroom door. The rule seemed to be enforced.

On one occasion tonight Paul [setup man] asked Jonesy to let him into the crib; he was in a hurry about something. But Jonesy shook his head, and Paul had to wait at the crib window with the rest of us.

Johnny, the setup man, predicted that the new ruling would be "tough on" the tool-crib employees, not on setup men.

Johnny says that the new rule is going to be tough on grinders and crib attendants, because setup men and foremen have been doing much of the grinding and have made it easier for them by coming in to help themselves to tools, jigs, etc.

Johnny says that the new rule suits him fine. Now he can just stand at the window and holler and let the toolroom employees do the work.

The line foremen seemed to take offense at the new "exclusion act" and threatened reprisals to the crib attendants.

At quitting time I noticed Gil [line foreman] talking to Walt at the crib window. Gil seemed very serious; Walt was waving his arms and otherwise gesturing in a manner indicating rejection of responsibility. I didn't catch any words but gathered that Gil was voicing disapproval or warning, and after Gil left I said to Walt, "Looks like you're behind the eight-ball now!"

I noticed that Walt's hair was mussed, and he looked a little wild. He denied that he was in any trouble whatsoever; nor was he worried about anything whatsoever.

"I'm just working here!" he exclaimed. "I just go by the cards, and beyond that I've got no responsibility!"

I was curious as to what Gil had told him and asked Johnny later, on the way home. I I had noticed that Johnny was standing near by when Gil was talking to Walt. Johnny said that Gil was telling Walt that from now on the crib was going to be charged with every minute of tool delay to the operators—that, if there was any waiting for tools, Gil was going to make out allowance cards charging these delays to the crib.

Contrary to Hanks's prediction, the new rule did "last out the week," and crowds milled around the crib window.

The boys seemed very much disgusted with the slow service at the tool crib. They crowd around the window (always a crowd there) and either growl or wisecrack about the service.

It was at this time that Jonesy, erstwhile optimist and regarded by shop employees as the most efficient of the crib attendants, decided that he had "had enough." He transferred to the quiet backroom retreat of tool-grinding. But several days later, just ten days since the new rule was promulgated, the sun began to break through the dark

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clouds of managerial efficiency. Hanks's prediction was off by four days.

While I was waiting for tools at the crib window tonight, I noticed the jockey [turret-lathe man] dash into the tool crib through a door that was left ajar; he was followed soon after by Gil. Later, when the door was closed, Paul shook it and shouted to the attendant, "Let me in!" He was admitted.

Steve [superintendent] called out, "Hey!" when he saw the jockey go into the crib. When the jockey came out, he spoke to him, and the jockey joshed him back. Steve did not seem to be particularly put out about it.

Soon the boys were going in and out of the crib again, almost at will, and setup men were getting setups ahead of time for operators, ignored by the crib attendants.

I noticed that Johnny and others seemed to be going in and out of the crib again, almost at will.

I noticed tonight that Johnny got into the tool crib by appearing at the door and saying to the attendant, "Let me in!"

So much for Faulkner's order—until he makes a new one!

When I asked Walt for some jaws to fit the chuck I had found, he said, "We've got lots of jaws back here, but I wouldn't know what to look for. You'd better get the setup man to come back here and find you some."

Walt said to me, "I break the rules here, but not too much—just within reason to keep the boys on production."

Faulkner's order still hangs at eye level on the crib door.

"So much for Faulkner's order!" The "fix" was "on" again, and operators and their service-group allies conducted business as usual for the remaining weeks of the writer's employment.

CONCLUSIONS

This rough sketch of the operation of one shop "syndicate" has been no more than indicative of the existence of intergroup cooperation in the lower reaches of factory social structure. No attempt has been made here to account for the aid extended by service groups, though suggestion that this assistance might be part of a larger system of reciprocal obligations has been implicit. It is apparent, for instance, that tool-crib attendants benefited from their practice of admitting operators and setup men to the toolroom to seek and pick up equipment.

A more complete picture of intergroup relations would include conflict, as well as co-operation, between operators and the various service groups. It could be shown, if space permitted, that changes in relationship accompanied, in cyclical fashion, changes in basic conditions of work.

Furthermore, attention has not been drawn to intragroup role and personality variations in intergroup relations. Such additional discriminations and the questions that they might raise in regard to the study of institutional dynamics must be left for future discussion.

As for their possible bearing on practical industrial administration, materials presented here seem to challenge the view held in some research circles that the "human" problem of industrial efficiency lies in faulty communication between an economically "rational" or "logical" management and "nonrational" or "nonlogical" work groups. While nothing has been offered to deny linkage between communication and efficiency, observations reported here suggest examination of the stereotypes of the two parties.[7] And questioning the fitness of the stereotypes may lead to a more fruitful conceptualization of the process that is reputedly in need of attention: communication.

Do we see, in the situation studied, an economically "rational" management and an economically "nonrational" work group? Would not a reversal of the labels, if such labels be used, find justification? Does it not appear that operatives and their allies resisted managerial "logics of efficiency" because application of those "logics" tended to produce something considerably less than "efficiency"? Did not worker groups connive

[7] William F. Whyte, "Semantics and Industrial Relations," *Human Organization*, VIII (spring, 1949), 1–7.

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to circumvent managerial ukase in order to "get the work out"? Did not Walt, for instance, break the rules "to keep the boys on production"? May not the common query of industrial workers, "What in the hell are they trying to do up there?" be not merely reflective of faulty communication but also based on real managerial inadequacy, quite apart from a failure in "explanation"? May it not be assumed that managerial inefficiency is and has been for some time a serious problem to those who labor?

If managerial directives are not the guides to efficient action that they are claimed to be, then, perhaps, "logics of efficiency" would be better designated as "sentiments of efficiency." When failure to "explain" is additionally considered, perhaps bulletin-board pronunciamentos might properly be classified with the various exorcisms, conjurations, and miscellaneous esoteric monkey-business of our primitive contemporaries.

If we conceive of "logical" behavior not as self-contained ratiocinative exercises but as intellectual operations in continuous reciprocal interplay with concrete experience, machine operators and their service-group allies would appear the real holders of "logics of efficiency." Like big-city machine politicians, they develop plans for action that, under given conditions of situational pressures, "work."

But this rejection of commonly held stereotypes cannot lead to mere reversal of invidious distinctions; the situation is far too complex for that. The group life that the writer shared was by no means devoid of "sentiments." To the contrary, operator interaction was rich in shared feelings, attitudes, and practices not only of doubtful bearing on getting the work out but often undeniably preventing production maximization. Nor can it be maintained that management, in applying its "sentiments of efficiency," was always ineffective. Perhaps solution to the human problem of industrial efficiency would best be expedited by abandoning altogether the use of contrasted caricatures handed down to us from a preindustrial social class structure. Instead of concerning ourselves with such blind-alley issues as who is "rational" and who is not, we might recognize with John Dewey that both intellectual and emotional activity are essentials of goal-directed behavior[8] and that the development of effective communication focusing on production goals is a matter of instituting interactional processes that engender ideas, sentiments, and plans for action held in common.

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[8] *Art as Experience* (New York: Minton, Balch & Co., 1934), p. 55.

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